

WHAT IS CLAIMED IS:

1. An optical pickup device for writing data or reading data recorded on an optical disk, said optical pickup device comprising:

a laser light source for emitting a laser beam for writing data or reading data;

photodetectors having light-receiving portions for respectively receiving the laser beam reflected by the recording surfaces of a plurality of layers of the optical disk; and

an optical system having a light condensing element for condensing the laser beam emitted from the laser light source onto the recording surfaces of the optical disk, and a light guide element for selectively guiding the laser beam reflected by the recording surfaces of the optical disk to any of the light-receiving portions; wherein

the light condensing element condenses the laser beam emitted from one laser light source onto the recording surfaces of layers of the optical disk, and forms an image at a plurality of focal distances that vary in steps, and the surfaces on which images are thereby formed correspond to the recording surfaces of layers of the optical disk; and

the light guide element guides reflected light reflected by the recording surfaces of the layers to a plurality of light-receiving portions, so as to simultaneously read or write data to the recording surfaces of the layers.

2. The optical pickup device according to claim 1, wherein the light condensing element is a hologram for condensing the laser beam emitted from the laser light source and focusing the laser beam on the

recording surfaces of the layers of the optical disk.

3. An optical pickup device for writing data or reading data recorded on an optical disk, said optical pickup device comprising:

- a laser light source for emitting a laser beam for writing data or reading data;

- photodetectors having light-receiving portions for respectively receiving the laser beam reflected by the recording surfaces of a plurality of layers of the optical disk; and

- an optical system for guiding to the optical disk the laser beam emitted from the laser light source, and guiding to the photodetectors the laser beam reflected by the optical disk;

- said optical system having:

- a half mirror for reflecting or transmitting a laser beam emitted from the laser light source, and transmitting or reflecting the light reflected from the optical disk;

- a collimator lens for converting the laser beam reflected or transmitted by the half mirror into parallel light;

- an object lens for condensing the laser beam converted to parallel light by this collimator lens onto the recording surfaces of the optical disk, having a curvature or refractive index that varies by steps in the radial direction, and comprising a multifocal lens for focusing on a plurality of recording surfaces of the optical disk, and

- a diffraction grating for diffracting a part of the laser beam penetrated or reflected by the half mirror and guiding the laser beam to any of the light-receiving portions; wherein

the object lens condenses the laser beam emitted from one laser light source onto the recording surfaces of the multiple layers of the optical disk, and

the diffraction grating guides reflected light reflected by the recording surfaces of the layers to a plurality of light-receiving portions, so as to simultaneously read or write data to the recording surfaces of the layers.

4. An optical disk playback device comprising:

the optical pickup device according to any of claims 1 through 3;

playback means for simultaneously reading data recorded on the recording surfaces of a plurality of layers of an optical disk by means of the optical pickup device and playing back the data of one of the recording surfaces; and

storage means for saving the data of the other recording surface.